

INTEGRATED STORAGE BIN AND LADDER SYSTEM

By

Doug Ferrante

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**Attorney:
Sean M. Fitzgerald
3182 Campus Drive #342
San Mateo, CA 94403-3123
(650)-430-1717**

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INTEGRATED STORAGE BIN AND LADDER SYSTEM

BACKGROUND

Field of the Invention

5 The field of the invention relates generally to storage systems and ladders. More particularly, the present invention relates to the field of providing portable storage for tools and other devices used in connection with a ladder.

Related Background

 The use of ladders with tools and other devices is common and widespread.
10 Typically, a ladder is used to provide access to a particular area where a tool or other device is to be used. While ladders have inherent hazards, the use of tools and equipment with a ladder adds to the dangers and inconvenience of using ladders. Typically, the ladder user needs to climb the ladder with the tool or equipment, and often needs to change the location of the ladder to continue work. The process of climbing the ladder while holding tools or
15 other objects increases the chances of an accident.

 When the ladder user is using the tool there is often a need to put the tool or equipment down, perhaps switching to another tool. One of the steps of the ladder is frequently employed to rest tools or other objects with awkward shapes which are often unsteady resting on the step of the ladder. Without a secure place to rest the tool the chances
20 of an accident are increased. Additionally, the frequent need to move the ladder to a new location often results in the hazard of moving a ladder with the tool or other object resting precariously on the top step of the ladder.

 Shelves, bags and other devices are available and provide some level of storage and convenience. Typical ladder shelves provide a place to rest tools or equipment, but are
25 vulnerable to accidents if the ladder is moved without removing the equipment from the shelf.

A ladder pouch, similar to a tool belt worn by workmen, is described in U.S. Patent No. 6,450,337 B1 issued to Campagna and DeMange. This type of pouch is strapped to a ladder and is specifically designed to hold hand tools, specifically screwdrivers, hammers, etc., and is designed to be installed on the cross supports on the back of the ladder. In addition to the awkward positioning on the back of the ladder, this ladder pouch is not easily adapted to hold or support large or bulky items. Additionally, this ladder pouch must be securely fastened to the ladder by the workman, which is both time consuming and introduces hazards if the installation is either improperly done or becomes undone at a later time.

Figure 1 shows a perspective view of a conventional ladder 1. A top rung 2 of the ladder is securely fastened to, and supported by, main legs 3. The main legs of the ladder are securely fastened to secondary legs 4 of the ladder. The secondary legs are attached in a manner to allow them to be collapsed against the main legs of the ladder for storage or transportation of the ladder, as is common in conventional ladders. Secondary rungs 5, or steps, of the ladder are securely fastened between the main legs of the ladder to provide a secure, stable platform for a person (i.e. a ladder user) to place their foot when climbing or standing on the ladder. The main legs and the secondary legs of the ladder provide support to the steps, allowing the weight of a workman to be securely supported. Typically, the legs of the ladder have a foot (not shown) attached to the bottom of the legs of the ladder to support the ladder on a floor. Stabilization rungs 6 provide support and structural rigidity and are attached to the secondary legs.

Accordingly, a need exists to provide safe and convenient storage for tools and other objects used in connection with ladders.

Brief Description of the Figures

Figure 1 is a perspective view of a typical ladder of the prior art.

Figure 2 is a perspective view of a ladder with an integrated storage compartment, in accordance with the present invention.

5 **Figure 3** is a perspective view of a ladder with an integrated storage compartment, in accordance with the present invention.

Figure 4 is a side view of a ladder with an integrated storage compartment illustrating a storage compartment lid in an open position, in accordance with the present invention.

Figure 5 is a side cross-sectional view of a ladder with an integrated storage
10 compartment, in accordance with the present invention.

Figure 6A is a cross-sectional side view of a ladder with an integrated storage pouch attached by support rails, in accordance with the present invention.

Figure 6B is a bottom view of the top rung of the ladder shown in **Figure 6A**, in accordance with the present invention.

15 **Figure 7A** is a cross-sectional side view off a ladder with an integrated storage pouch attached by a support loop, in accordance with the present invention.

Figure 7B is a bottom view of the top rung of the ladder shown in **Figure 7A**, in accordance with the present invention.

Figure 7C is a side cross-sectional view of an alternate embodiment of the rail loop
20 support system, in accordance with the present invention.

Figure 7D is an expanded side cross-sectional view of the rail loop support system of **Figure 7C**, in accordance with the present invention.

Figure 8A is a cross-sectional side view off a ladder with an integrated storage pouch attached by a support clamp, in accordance with the present invention.

25 **Figure 8B** is a bottom view of the top rung of the ladder shown in **Figure 8A**, in accordance with the present invention.

Figure 9A is a cross-sectional side view off a ladder with an integrated storage pouch attached by support tacks, in accordance with the present invention.

Figure 9B is a perspective view of the top rung and storage pouch shown in Figure 9A, in accordance with the present invention.

5 **Figure 10A is a perspective view of a ladder with a removable integrated storage pouch, in accordance with the present invention.**

Figure 10B is a perspective view of the ladder shown in Figure 10A illustrating the storage bin removed from the ladder, in accordance with the present invention.

10 **Figure 10C is a side-cross sectional view of the ladder and storage bin as shown in Figures 10A and 10B, in accordance with the present invention.**

Figure 11A is a perspective view of an alternate embodiment of the present invention illustrating a ladder with a removable integrated storage bin formed to contain liquids, in accordance with the present invention.

15 **Figure 11B is a perspective view of the ladder shown in Figure 11A illustrating the removal of the liquid container storage bin, in accordance with the present invention.**

Figure 12 is a perspective view of an alternate embodiment of the present invention illustrating a ladder having multiple storage pockets within the storage pouch and a drill bit holder on the top lid, in accordance with the present invention.

20 **Figure 13 is a perspective view of an alternate embodiment of the present invention illustrating a ladder having multiple dividers within the storage bin to create, in accordance with the present invention.**

Figures 14 is a perspective view of an alternate embodiment of the present invention illustrating a ladder having a storage chest with multiple extracting storage trays, in accordance with the present invention.

25 **Figures 15A is a perspective view of an alternate embodiment of the present invention illustrating a ladder having an alternate slide-lock latching mechanism to secure the top lid in the closed position, in accordance with the present invention.**

Figures 15B is an expanded perspective view of the slide-lock latching mechanism shown in Figure 15A, in accordance with the present invention.

Figure 15C is an expanded cross sectional view of the slide-lock latching mechanism shown in Figures 15A and 15B, in accordance with the present invention.

5 Figure 16 is a perspective view of an alternate embodiment of the present invention where the storage pouch is integrated into a lower step of the ladder, in accordance with the present invention.

Figure 17 is a perspective view of an alternate embodiment of the present invention having a flap-closure system, in accordance with the present invention.

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SUMMARY

The present invention provides a safe and convenient storage bin integrated into a ladder for holding tools and other objects used with a ladder. The ladder includes at least one step securely attached to support legs and a storage bin securely attached to one of the steps, wherein the storage bin is located below the attached step. The ladder also includes a storage compartment lid, movably attached to the step of the ladder attached to the storage bin, the lid movably attached to allow opening and closing of the storage bin. The storage compartment lid is movably attached to the step with a hinge. In one embodiment the storage compartment is formed from a flexible material to form a storage pouch. In an alternative embodiment the storage pouch is supported by clamping the upper portion of the flexible material with a support clamp securely fixed to the step of the ladder. The support clamp may be formed as an integral part of the step. In an alternative embodiment the storage pouch is supported by a rail support system. The rail support system may be formed from a rail loop, the rail loop supported by rail loop supports, said rail loop supports securely fixed to the step. The rail support may be formed from flat rails, and wherein the flat rails are attached to the step by rivets. In one embodiment the rail support system consists of at least two support rails, the support rails being securely attached to the ladder by a rail support on either end of the

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support rail. The storage bin of the ladder may also include at least one divider, said divider attached to the storage bin such that the storage bin is segregated into two or more separate bins. The storage bin of the ladder may also include a storage tray formed to fit inside the storage bin. The storage tray may be connected to the ladder by tray supports. A second
5 storage tray may be connected to the first storage tray by tray supports. The tray supports may be attached to the storage trays and to the ladder to allow the storage trays to swing to provide access to the contents of the storage bin.

In an alternate embodiment the ladder may have a removable storage bin wherein the steps forms a storage bin support such that a removable storage bin may be placed within the
10 support formed by the step and securely supported by the storage bin support step. The support step may be formed such that when a storage bin is placed in the support step the upper surface of the support step and the upper surface of the storage bin form a step suitable for use by a person using the ladder. The support step may be formed such that when a storage bin is placed in the support step the upper surface of the support step and the upper
15 surface of the storage bin form a step suitable for use by a person using the ladder.

DETAILED DESCRIPTION

The present invention is described in the context of a specific embodiment. This is
20 done to facilitate the understanding of the features and principles of the present invention and the present invention is not limited to this embodiment. In particular, the present invention is described in the context of storage systems used in connection with a ladder.

In the following figures like objects are provided with the same identifying number as an aid in understanding the present invention.

25 **Figure 2** shows a perspective view of a ladder 10 with an integrated storage bin 11. A top rung 12 of the ladder 11 has an integrated lid 13. The integrated lid functions as the top rung of the ladder when in the closed position depicted in **Figure 2**. The storage bin is

located below the top rung of the ladder between the main legs 14 of the ladder and placed not to interfere with a person stepping on the secondary rung 15 of the ladder below the storage bin. Additionally, the placement of the storage bin is such that it does not interfere with collapsing of the secondary legs 16, for storage or transport of the ladder. In the
5 presently preferred embodiment, the storage bin extends approximately 11 inches from the bottom of the top rung of the ladder.

Figure 3 is a perspective view of the ladder shown in Figure 2, illustrating the integrated lid 13 in the partially open position. The integrated lid is securely attached to the top rung of the ladder by a hinge 17, the hinge being securely fastened to both the top rung
10 and to the integrated lid. The hinge allows the integrated lid to open to reveal the contents of the storage bin. In the presently preferred embodiment, the hinge is fastened in a position so that when the integrated lid is in the closed position the hinge does not protrude above the upper surface of the top rung of the ladder. In the presently preferred embodiment, the storage bin provides a rectangular storage space. Alternate embodiments of the present
15 inventions could provide alternate shapes and sizes of storage bins suited to particular tools, equipment or uses of the ladder. For example, the storage bin could be round in shape, particularly adapted to hold a paint can or wash bucket. Other sizes and shapes could be used for different tools or equipment.

Figure 4 is a side view of the ladder shown in Figure 2. A lid latching tab 18 extends
20 from the end of the integrated lid 13, downward when the lid is in the closed position. As described in connection with Figure 15, the lid latching tab is part of a latching mechanism to securely hold the lid in the closed position.

Figure 5 is a cross-sectional side view of the ladder shown in Figure 2. The integrated lid 13 is shown partially open. The secondary step 15 is positioned below the
25 bottom of the storage bin 11, with sufficient clearance between the bottom of the storage bin and the top, stepping surface of the secondary step to allow a workman to step on the secondary step without hitting or catching the workman's foot between the storage bin and

the secondary step. A secondary rung 19 attached between the secondary legs is positioned such that it does not interfere with the collapsing of the secondary legs for storage or transport of the ladder.

Figure 6A is a cross-sectional side view of a ladder as shown in Figures 2 and 3 illustrating a rail support system. In the presently preferred embodiment, the storage bin is made of canvas. More particularly, the storage bin forms a pouch made from a durable canvas cloth, particularly chosen to endure the use of the storage pouch for tools such as hammers, drills, cutting tools, as well as equipment such as nails, fixtures, caulking, glues, etc. As seen in Figure 6A, the storage pouch is securely fastened to the top rung by looping the upper portion of the storage pouch over support rails 20, and stitching the ends of the upper portion of the storage pouch to the body of the storage pouch, as shown at point A. In the presently preferred embodiment, four rails are used to secure the storage pouch, one rail on each of the four sides that make up the opening to the contents of the storage pouch framed by the top rung, thereby providing support for all four sides of the storage pouch. The positioning and attachment of the support rails is shown in Figure 6B.

Figure 6B is a bottom view of the top rung of the ladder shown in Figure 6A. Both ends of the support rails are securely fastened to the top rung by rail supports 21. The rail supports are securely fastened to the top rung of the ladder. In the presently preferred embodiment, the rail supports are formed as a separate piece from the top rung of the ladder and securely fastened to the top run, for example, by screws, bolts, tongue and groove, boding or gluing, or any other suitable way of securely fastening. The support rails 20 extend into the rail supports, thereby transferring the load of the rail supports to the top rung of the ladder. The rail supports are positioned in the four corners of the opening to the storage bin formed by the top rung. In the embodiment shown in Figure 6A, the rail support in each corner support the end of two different rails. Alternate embodiments of the present invention could have the rail supports attaching to only one rail.

Figure 7A is a bottom view of the top rung of the ladder shown in **Figures 2 and 3** illustrating an alternate embodiment of a storage pouch support system. A rail loop 22 is securely attached to the bottom side of the top rung. The rail loop is formed as one continuous loop, providing four straight rail sections which function as rails supports as described in connection with **Figures 6A and 6B**. In the presently preferred embodiment, at each corner rail loop attachment tabs 23 are securely attached to the rail loop, or formed as part of the rail loop. The rail loop attachment tabs provide a secure attachment to the top rung 12. The rail loop attachment tabs could be screwed, bolted, glued, or otherwise securely fastened to the top rung of the ladder.

Figure 7B is a side cross-sectional view of the rail loop support system shown in **Figure 7A**. As described above in connection with **Figure 6A**, the storage pouch is securely fastened to the support loop by looping the upper portion of the storage pouch 11 over the support loop 22, and attaching the ends the upper portion of the storage pouch to the body of the storage pouch at point A. The attachment tabs 23 extend from the support loop to securely fasten to the top rung 12.

Figures 7C and 7D illustrate a side cross-sectional view of an alternate embodiment of the rail loop support system. A support loop 24 is formed from a metal strips, or bars, to form an integrated support loop. In the presently preferred embodiment, the bars are $\frac{1}{4}$ " inch aluminum flat stock welded together at their ends to form a support loop of the approximate size and shape of the opening in the top rung 24 of the ladder. The upper ends of the storage pouch 11 are looped, or folded, over the support loop and attached to itself (the storage pouch) at point B. In the preferred embodiment the attachment at point B is made through sewing the upper ends of the storage pouch to the main body of the storage pouch. Alternate embodiments could use other forms of attachment such as the use of adhesives or heat bonding. In this manner the storage pouch is securely attached to the support loop to prevent the weight of the contents of the storage pouch from pulling the upper ends out from the

support loop. The support loop 24 is placed against the top rung 12 and secured to the top rung.

Figure 7D is an expanded view of the cross section of the support system shown in Figure 7C. Figure 7D illustrates an alternate, and presently preferred, system of securing the support loop to the top rung. Specifically, rivets 25 pass through holes in the top rung, through the storage pouch, through the support loop 24 and again through the storage pouch 11, the storage pouch looping over the support loop 24. In the presently preferred embodiment the top rung is formed from a molded plastic and the rivets ends 26 contacting the top rung are flush with the exterior surface of the top rung. The support loop provides additional structural rigidity to the top rung of the ladder, to compensate for any loss of structural rigidity from the opening in the top run to access the contents of the storage pouch.

While the support loop of Figures 7C and 7D is formed as one loop, from several pieces of flat stock formed as a single support loop, which is riveted to the top rung, an alternate embodiment of the present invention could have multiple support rails independently attached to the top rung. For example, four pieces of flat stock could be used along the four sides of the opening of the top rung, with all four sides independently fastened to the top rung. Additionally, alternate embodiments of the present invention may have more or fewer flat stock rails.

Figure 8A is a side cross-sectional view of the top rung of the ladder shown in Figures 2 and 3 illustrating an alternate embodiment of a storage pouch support system. Figure 8B is a perspective view of the top rung and storage pouch illustrated in Figure 8A. A storage pouch clamp 27 is attached to the bottom rung 12. The upper portion of the storage pouch 11 is securely held in place by the storage pouch clamp. In the presently preferred embodiment the storage pouch clamp is formed as part of the top rung, as for example when the top run is made of an injection molded plastic. In an alternate embodiment the storage pouch clam is formed separately from the top rung of the ladder and securely fastened to the ladder, for example, by screws, bolts, rivets, interlocking channels, adhesives, etc.

Figure 9A is a side cross-sectional view of the top rung of the ladder shown in **Figures 2 and 3** illustrating an alternate embodiment of a storage pouch support system. **Figure 9B** is a perspective view of the top rung and storage pouch shown in **Figure 9A**. The storage pouch 11 is secured to the top rung 12 by a series of tacks, or small nails 28. The upper portion of the storage pouch is nailed against the top rung. As appreciated by one of ordinary skill in the art, the number and spacing of the tacks or nails is such that the weight of items supported in the storage pouch does not result in tearing the storage pouch resulting from too few nails spaced too far apart.

Figure 10A is a perspective view of an alternate embodiment of the present invention illustrating a ladder with a removable integrated storage bin. A removable storage bin 30 is securely placed within the top step 31 of the ladder 32. The lid 33, when in the open position as shown in **Figure 10A**, allows access to the contents of the removable storage bin 30. Conversely, when in the down, or closed, position the lid 33 is securely held in the closed position by a clasp of latching mechanism 34, thereby creating a secure enclosure for the contents of the removable storage bin. **Figure 10B** illustrates the removable storage bin 30 removed from the ladder 32. When the storage bin 30 removed a top step opening 35 is shown where the removable storage bin may be placed. In the embodiment shown in **Figure 10A, 10B and 10C** lid 33 is securely attached to the removable storage bin 30.

Figure 10C is a side-cross sectional view of the ladder and storage bin as shown in **Figure 10A and 10B**, illustrating the details of the interconnection between the removable storage bin 30 and the top step 31 of the ladder 32. Storage bin supports 36 are integrated as part of the top step 31 such that when the removable storage bin 30 is placed in the top step opening 35, support flanges 37 of the removable storage bin 30 rest on the storage bin supports 36. The storage bin supports 36 are placed on at least two opposing sides of the top step opening 35 to allow the weight of the removable storage bin 30 to be evenly supported to securely hold the storage bin in place within the top step 31 of the ladder 32. A storage bin handle 38 is securely attached to the top of the lid 33. While the presently preferred

embodiment utilizes storage bin supports on all four sides of the rectangular top step opening 35, alternate embodiments could use more or fewer storage bin supports to accommodate the shape, size, and weight of the storage bin (and its contents). For example, the rectangular opening illustrated in Figure 10B could use two storage bin supports at either the front and back of the top step opening (corresponding to the front and back of the ladder, respectively), or it could have the storage bin supports placed on the two sides of the rectangular opening. Additionally, the storage bin supports need not extend along then entire side of top step opening.

While the above example used only one removable storage bin, alternate embodiments of the present invention could have multiple removable storage bins to meet the needs of the application of the present invention.

Figure 11A is a perspective view of an alternate embodiment of the present invention illustrating a ladder with a removable integrated storage bin formed to contain liquids. The storage bin 40 is cylindrical in shape, similar in size and shape to a paint can. Figure 11B illustrates the removable liquid storage bin 40 removed from the ladder 42. The top step 41 includes a lid 43 hinged (hinge not shown) to open to reveal the contents of the storage bin 40. The lid 43 includes a sealing flange 44 on the side of the lid facing the storage bin when the lid is in the closed position. The sealing flange designed to seal the storage bin when the lid is in the closed position, providing a secure sealed container for paint or other liquids.

The removable liquid storage bin 40 rests in a top step opening 45 formed to accommodate the shape and size of the removable liquid storage bin. A removable liquid storage bin flange 46 on the removable liquid storage bin contacts the removable liquid storage bin supports to securely hold the removable liquid storage bin in the ladder. The removable liquid storage bin may also include a lid to provide a liquid tight seal for transporting liquids in the removable liquid storage bin.

While the above example used only one liquid storage bin, alternate embodiments of the present invention could have multiple liquid storage bins to meet the needs of the application of the present invention.

While the removable liquid storage bin above was removable, alternate embodiments
5 could have the liquid storage bin fixed within the ladder.

Figure 12 is a perspective view of an alternate embodiment of the ladder shown in Figures 2-3. A drill bit holder 50 is securely attached to the underside (the side of the integrated lid facing the interior of the storage bin 11 when the lid is in the closed position) of the integrated lid 13. The drill bit holder is positioned to allow easy placement and removal
10 of drill bits while a workman is standing on the ladder, with the lid in the open position. When the integrated lid is in the down, or closed position, the drill bit holder is secured within the storage bin. Within the storage bin of the ladder are storage pockets 51. In the presently preferred embodiment, the storage pockets are attached to the outer walls of the storage bin. In the preferred embodiment, the storage bin is the storage pouch as described
15 in connection with Figures 2-3, and the storage pockets are made from a durable canvas material and are securely attached to the storage pouch. In the preferred embodiment, the storage pouches have open tops and closed bottoms, to securely hold items such as nails, screws, wrenches, etc. Alternate embodiments of the present invention could have storage loops, similar to the storage pockets except that the bottom is open in addition to the top
20 being open. Storage loops are particularly adapted to securely hold items such as hammers, etc. Alternate embodiments of the present invention could have the storage pockets having a closing mechanism to securely close the contents of the pocket, including zippers, snaps, buttons and loop, VelcroTM or flaps secured by any of the prior listed securing systems. Additionally, storage pockets or storage loops could be formed from other materials, such as
25 plastic, nylon, vinyl or other materials, depending upon the application of the storage system and the expected contents.

Alternate embodiments of the present invention could have holders attached to the underside of the lid to hold other tools or items in addition to, or in place of, the drill bit holder. For example, a holder could be adapted to hold screwdrivers, paint brushes, consumables such as fuses, nails or screws, or other items.

5 While the storage pocket embodiment shown above is the only embodiment in the present application including a holder on the underside of the lid, alternate embodiment of the present invention could include a holder with other configurations of the storage bin.

 Figure 13 is a perspective view of an alternate embodiment of the ladder shown in Figures 2-3. Within the storage bin of the ladder are storage dividers 55 and 56. The storage
10 dividers divide the main bin into sub-bins, to allow tools, equipment and other items to be organized within the storage compartment. As shown in Figure 13, dividers 55 and 56 divide the storage bin from the front of the bin, the area of the bin closes to a workman standing on the ladder, to the rear of the bin. Divider 55 extends from the front of the storage bin (the side of the bin closest to a user standing on the steps of the ladder) to the rear
15 of the storage bin, and divides the storage bin into side by side compartments. Divider 56 extends across the storage bin and divides the storage bin into front and rear compartments. Alternate embodiments of the present invention could have more or fewer dividers, and more or fewer corresponding compartments. The compartments could be of varying size and shape, and need not be square or rectangular, but may be shaped to accommodate the items to
20 be stored in the storage bin. Additionally, alternate embodiments of the present invention could have the dividers formed from canvas, or other flexible materials, depending upon the desired use of the present invention.

 The divided storage bin embodiment shown in Figure 13 can be combined with other embodiments of the present invention to meet the stage and work needs of the intended
25 application. For example, the divided storage bin of Figure 13 may be combined with the removable storage bin of Figures 10A-10C, or may be combined with the storage pockets shown in Figure 12. Other combinations, between the embodiments of the present invention

are also possible, depending on the particular needs of the application of the present invention.

Figures 14A-B provides a perspective view of an alternate embodiment of the present invention. In Figure 14A a storage tray 61 is shown integrated into the storage bin of the ladder 60. The storage tray is connected to the storage bin 11 by storage tray supports 62. The storage tray supports of the present embodiment pivot on either end to allow the storage tray to swing up and back to reveal the contents of the storage bin. The storage tray 61 may have dividers or other storage systems such as holders, closable bins, etc. In the embodiment shown in Figure 14A the storage tray has dividers 63 arranged to create storage areas of different sizes (or of different shapes) for small items and larger items. A lid 13 is attached to the top step 12 and closes securely when the storage tray is in the down, or lowered, position.

Figure 14B illustrates an alternate embodiment of the integrated storage tray embodiment having multiple storage trays 61. A second, upper storage tray 64 is attached to the lower storage tray by tray supports 62. The tray supports are connected on one end to the upper storage tray, and on one end to the lower storage tray, thereby securely fastening the upper storage tray to the ladder, the lower storage tray being securely attached to the ladder by tray supports attaching on one end to the lower storage tray and on one end to the ladder. As with the tray supports of Figure 14A, the tray supports 62 are rotatably attached at both ends, to allow the upper tray to swing to provide access to the lower tray, and to the storage bin below the lower tray.

While the presently preferred embodiment of the storage tray example shown in Figures 14A-14B use stays which are rotatably attached to both the storage tray and either another storage tray or to the ladder, alternate embodiments of the present invention could use other systems to allow the trays to swing away to provide access to the contents of the storage bin (or to provide access to another storage tray).

While the storage trays shown in Figures 14A-14B are securely attached to the ladder, alternate embodiments of the present invention could have removable storage trays,

either with or without the mechanism to swing the storage trays to provide access to the contents of the storage bin.

Figure 15A provides a perspective view of an alternate latching mechanism embodiment of the present invention. **Figure 15B** provides an expanded perspective view of the ladder and latching mechanism shown in **Figure 15A**, illustrating the latch and top lid of the ladder in the open position. **Figure 15C** is an expanded side cross-sectional view of the latching mechanism shown in **Figure 15A**. A sliding latch 71 slides to cover a latching tab 72 of the lid 13 of the top step 12 of the ladder 70. When the sliding latch covers the latching tab of the lid (when in the locked position as shown in **Figure 15A**) the lid is securely held in the closed position. When the sliding latch is slid back to uncover the latching tab of the top lid (when the sliding latch is in the unlocked, or open position as shown in **Figure 15B**) the lid is free to open. The sliding latch is fixed to the top step of the ladder in a manner to allow the latch to slide between the locked and unlocked positions, thereby exposing or covering the latching tab of the top lid.

Figure 16 is a perspective view of an alternate embodiment of the present invention where the storage bin 11 is integrated into a lower step 75 of the ladder 76. A lid 77 is integrated as part of the lower step 75. The lid may have a sliding lock latching mechanism, or other type of latching mechanism to hold the lid securely closed. While the embodiment shown in **Figure 16** has the storage bin integrated with the second step from the top of the ladder, alternate embodiments could have the storage bin integrated into any of the steps of the ladder. Additionally, the present invention allows for more than one storage pouch to be integrated into the ladder, and allows for multiple steps on a given ladder to have integrated storage pouches.

Figure 17 is a perspective view of an alternate embodiment of the present invention having a flap-closure system. The storage pouch 11 is attached to the underside of the top step 81 of the ladder 80. The storage pouch has an opening 82 in the front of the ladder, to allow access to the contents of the storage pouch. A storage pouch flap 83 covers the opening

of the storage pouch 11. The storage pouch flap may be securely closed by snaps 84, or by other closure systems such as a zipper, button and loop, or other closure devices.

The embodiments described above typically had one or two rungs, or steps, for purposes of describing the present invention. Actual implementations of the present invention could be on ladders with only one run (the top rung) or with many rungs, depending on the particular application of the present invention.

The invention has been described with reference to particular embodiments. However, it will be readily apparent to those skilled in the art that it is possible to embody the invention in specific forms other than those of the preferred embodiments described above. This may be done without departing from the spirit of the invention.

Thus, the preferred embodiment is merely illustrative and should not be considered restrictive in any way. The scope of the invention is given by the appended claims, rather than the preceding description, and all variations and equivalents which fall within the range of the claims are intended to be embraced therein.